

REMARKS

Claims 1-4 and 6-11 are pending. Applicants cancel claim 5, and add claims 9-11 to further define the invention as discussed in detail below.

The Abstract is objected to for containing the word "comprising". Applicants amend the Abstract to overcome this objection.

Claim 2 is objected to for a minor informality. Applicants amend claim 2 to overcome this objection.

Claims 6 and 7 are rejected under 35 U.S.C. § 112, second paragraph, for failing to provide antecedent basis for certain limitations. Applicants amend the claims to remove any ambiguities.

Claims 1-8 are rejected under 35 U.S.C. § 102(b) as being anticipated by Brennan et al. (USP 4,873,461).

Analysis

Claim 1 is the only claim in independent form; therefore, the following discussion is initially directed to this independent claim.

Claim 1 is directed to a motor for driving a blower fan. It includes a case body, a rear end plate fixed to a rear end opening portion of the case body, and a front end plate fixed to the front end opening portion of the case body. A rotary drive shaft is inserted into the central portion of the case body, and has a rear end portion rotatably supported on the rear end plate of

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the first bearing on the rear end plate, while the forward middle portion is rotatably supported on the front end plate through a second bearing.

A rotor is fixed on the middle portion of the rotary drive shaft and a stator is fixed on the inner circumferential surface of the case body to face to the outer circumferential surface of the rotor. A reinforcing portion is provided in the vicinity of an end portion of the stator.

With the reinforcing portion of the present invention, blower fan motor is secured without causing the undesirable noise and vibrational problems of the prior art.

Brennan is directed to an electric motor for a surgical power tool. The reinforcing portion of the present invention is distinguishable from the alleged reinforcing portion 90, 91 of Brennan for several reasons.

The structure of the reinforcing portion of the present invention according to claim 1 is very different from the wedge 90 of Brennan. For instance, the wedge 90 of Brennan does not include a ring portion and a cylinder portion which continues from the outer peripheral edge of the ring portion. Instead, Brennan discloses a cylinder portion 93 that extends from the inner peripheral edge of the member 92. The alleged ring portion 92 is merely a "flat annular member" (col. 4, lines 26).

The wedge member 90, 91 of Brennan includes the cylinder portion (axial flange) 93 from the inner periphery of the flat annular member 92, so that the tapered surfaces 94 of the flanges 93 are received in the ends of the split sleeve 83. This structure is specifically provided to expand the split sleeve 83 outwardly against the magnets 65 to fixedly secure the magnets

within the casing. (See col. 4, lines 40-68.) The cylinder portion 93 is not capable of contacting the inner surface of the case body.

This is clearly different from the present invention according to claim 1, wherein the cylinder portion is provided at the outer periphery of the ring portion. With this structure of the present invention, the cylinder portion is used to press against the inner surface of the case body.

In view of the foregoing, claim 1 is not anticipated by Brennan.

The remaining rejections are directed to the dependent claims 2-4 and 6-8. These claims are patentable for at least the same reasons as claim 1 above, by virtue of their dependency therefrom. Moreover, these claims are patentable by virtue of their own recitations contained therein.

For example, claim 7 recites that the outer circumferential surface of the cylinder portion has a conic surface which is inclined so that a diameter of the cylinder portion gets larger as the distance from the ring portion increases. This feature is shown in Fig. 2 for example. In contrast, Brennan discloses the opposite configuration; not only is the cylinder portion provided at a different placement with respect to the ring portion, but the tapered surface is inclined so that a diameter of the cylinder portion gets smaller as the distance from the ring portion increases (see Fig. 2 of Brennan). Thus, claim 7 is patentable for these additional reasons.

Still further, new claim 9 is added to clarify the positional relationship of the reinforcing portion with respect to the case body according to the first embodiment. In particular, outer surface of the cylinder portion engages with the inner circumferential surface of the case body.

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In contrast, the cylinder portion of Brennan merely engages with the split sleeve 83. Thus, claim 9 is patentable for these additional reasons.

Still further, new claim 10 further clarifies that the reinforcing portion is disposed in the case body so that the cylinder portion extends from the ring portion in a direction away from the stator, so that the ring portion is disposed between the cylinder portion and the stator. Brennan discloses the opposite structural relationship. Thus, claim 10 is patentable for these additional reasons.

In addition, independent claim 11 is added to further define the present invention. Claim 11 is directed to the second embodiment of the invention, wherein the reinforcing portion is comprised of bent portions which are formed at an end portion of a case body, bent toward an inside thereof, intermittently around the inner circumferential surface of the case body, each having an approximately U-shape. These reinforcing portions serve to make the portions of the case body between the stators more resistant to deformation. Brennan fails to teach or suggest this structure, and thus, claim 11 is patentable.

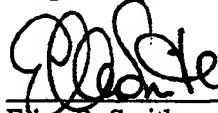
Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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Respectfully submitted,



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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The specification is changed as follows:

Page 8, paragraph 4 (after "First Embodiment"):

Figs. 1 to 5 show a first embodiment of the present invention. Similar to the conventional construction as mentioned before, a motor of the first embodiment is used for driving a blower fan (not illustrated) of a car air conditioner and includes a case body 1 which is cylindrically formed of an iron based magnetic material. In a condition where the blower fan is incorporated in the car air conditioner, the case body 1 is disposed substantially in the vertical direction. At two positions on opposite sides in the diametrical direction of the middle portion in the axial direction of the inner circumferential surface of the case body 1, a pair of stators (permanent magnets) 2 are supported and fixed. These stators 2 are respectively formed in a partially cylindrical shape as a whole having an arc-like section and the radius of curvature of each outer circumferential surface is formed to be slightly larger than the radius of curvature of the inner circumferential surface of the case body 1. Then, in a condition where the both edge portions of the stators 2 with respect to the circumferential direction of the case body 1 and the inner circumferential surface of the case body 1 are in contact with each other, the stators 2 are respectively fixed by a glue 3, as shown in Fig. 5, on the inner circumferential surface of the inner circumferential surface of the case body 1. Therefore, in the present embodiment, the glue 3 is filled in a clearance portion 25, as shown in Fig. 5, between the outer circumferential surface

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of each of the stators 2 and the inner circumferential surface of the case body 1. Accordingly, in the first embodiment, the bonding strength between both members 1 and 2 can be sufficiently secured and it is possible to make the vibration of the stators 2 be hardly transmitted. That is, the glue 3 filled with in the clearance portion 25 between both circumferential surfaces not only [joints said] joins both circumferential surfaces but also absorbs the vibration.

Page 13, paragraph 1:

The reinforcing ring 22 constructed as mentioned above is fixed by press fitting on a portion that is slightly shifted toward the rear end side from the portions where the stators 2 are fixed on the parts of the inner circumferential surface of the case body 1. Therefore, in the first embodiment, as shown in Fig. 4, the reinforcing ring 22 is press fitted inside the rear end portion of the case body 1 from the side where the ring portion 23 is provided while the diameter of the cylinder portion 24 is resiliently [shrieked] shrunked. Accordingly, the outside diameter of the ring portion 23 is set to be the same as or slightly smaller than the inside diameter of the case body 1, and the maximum outside diameter of the cylinder portion 24 in a free condition is set to be slightly greater than the inside diameter of the case body 1. In the first embodiment, since the reinforcing ring 22 is fixed on the case body 1 as mentioned above, it becomes possible to make the portions where the stators 2 are fixed on the parts of the case body 1 resistant to deformation (high in rigidity).

Page 14, paragraph 1:

When the motor for driving a blower fan of the invention constructed as described above is incorporated in a car air conditioner as mentioned above, the blower fan is fixed on a portion that is projected from the front surface of the front end plate 6 of the front end portion of the rotary drive shaft 10. Also, the motor excluding its front end portion is stored and supported in a cylindrical attachable bracket 26 having a bottom made of a synthetic resin. Then, the motor is fixed on the outer wall of an upstream end portion of a duct (not illustrated) which composes the car air conditioner by means of [a] an attaching flange 27 provided and fixed on the outer circumferential surface of the middle portion of the attachable bracket 26. Herein, a part of the rear end face of the rear end plate 4 which is provided on the rear end portion of the motor is butted to the tip face of a projection 31 provided on a part of the bottom surface of the attachable bracket 26. Also, the projection 31 and the part of the rear end plate 4 are combined by means of a screw 32. Accordingly, a clearance is formed between the rear end face of the rear end plate 4 and the bottom surface of the attachable bracket 26 except for the portion where the projection 31 is provided. Thus, since a clearance exists, the vibration which occurs at the rear end plate 4 comes to be barely transmitted to the attachable bracket 26.

Page 15, paragraph 1:

Also, at a position which coordinates with an inner air-supply hole 21 formed on the rear end plate 4 on a part of the attachable bracket 26, an outside air-supply hole 28 is provided, and the outside air-supply hole 28 and a portion where the air blown out by the blower fan passes in

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the middle portion of the duct are communicated by means of [a] an air-supply hose 29.

Accordingly, when the car air conditioner is running, a part of the air that circulates in the duct is sent into the attachable bracket 26 and said air further passes through inside the motor and then goes out to the rear side portion of the blower fan, and thus the components of the motor can be cooled.

IN THE CLAIMS:

Claims 5 is canceled.

The claims are amended as follows:

1. (Amended) A motor for driving a blower fan comprising:
 - a cylindrical case body having a front end opening portion and a rear end opening portion;
 - a rear end plate fixed on the rear end opening portion of the case body, the rear end plate having a first bearing;
 - a front end plate fixed on the front end opening portion of the case body, the front end plate having a second bearing;
 - a rotary drive shaft inserted into the central portion of the case body, the rotary drive shaft whose rear end portion is rotatably supported on the rear end plate through the first bearing and whose forward middle portion is rotatably supported on the front end plate through the second bearing;
 - a rotor fixed on the middle portion of the rotary drive shaft;

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a stator fixed on the inner circumferential surface of the case body to face to the outer circumferential surface of the rotor; and

a reinforcing portion provided in the vicinity of an end portion of the stator [fixed],

wherein the reinforcing portion includes a ring portion and a cylinder portion extending from an outer peripheral edge of the ring portion.

4. (Amended) The motor as set forth in claim 1 wherein the [reinforcing portion is a reinforcing] ring portion is made of hard material, and the [reinforcing] ring portion is fixed on a part of the inner circumferential surface of the case body and formed into an annular shape as a whole.

6. (Amended) The motor for driving a blower fan as set forth in claim [3] 1 wherein [the] a length in the diametrical direction of the ring portion [composing the reinforcing ring] is [set not to be less than the] no less than a thickness of the stator fixed on the inner circumferential surface of the case body.

7. (Amended) The motor as set forth in claim [5] 1 wherein, before the [reinforcing] ring portion is fixed, the outer circumferential surface of the cylinder portion [composing the reinforcing ring] has a conic surface inclined in a direction such that [the] a diameter [becomes large] increases as a distance from the ring portion [is long] increases.

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8. (Amended) The motor as set forth in claim [3] 1, wherein the [reinforcing] ring portion is fixed by press fitting on a part of the inner circumferential surface of the case body.

Claims 9-11 are added as new claims.

IN THE ABSTRACT OF DISCLOSURE:

The abstract is changed as follows:

A reinforcing ring (22) [comprising] includes a ring portion (23) and a cylinder portion (24) is press fitted on a portion which is slightly shifted toward the rear end side from portions on which stators (2) are fixed on parts of a case body (1).